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| 10/580,459 | 05/24/2006 | Anne-Marie Caminade | 1004900-000277 | 5519 |
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| EXAMINER DOLLINGER, MICHAEL M | | | | |
| ART UNIT 1796 | | PAPER NUMBER | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary

Application No.

10/580,459

Applicant(s)

CAMINADE ET AL.

Examiner

MICHAEL DOLLINGER

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 54-107 is/are pending in the application.
- 4a) Of the above claim(s) 89-107 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 54-66, 68-73, 75-77, 79, 80, 83, 84, 87 and 88 is/are rejected.
- 7) ☒ Claim(s) 67, 74, 78, 81, 82, 85 and 86 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-846)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Newly submitted claim 107 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claim 107 belongs to non-elected Group III.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 107 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Objections

2. The objection(s) to claims 87 and 88 in the Office Action filed on 09 July 2008 have been obviated by the amendment(s) to the claim(s).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 78 recites the limitation "-C(D)=N-N(E)-(Alk)_a-" in line 2. There is insufficient antecedent basis for this limitation in the claim. For purposes of examination, Examiner takes the position that D and E are as defined in claim 69 or claim 64.

5. The remainder of the rejection(s) to claims 64, 67 and 84-88 under 35 USC § 112 in the Office Action filed on 09 July 2008 have been obviated by the amendment(s) to the claim(s).

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thornton*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 54, 55, 58, 59, 61-66, 68-70, 72, 75-77 and 80-84 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 60, 62-73, 75-78, 80-83 and 88 of copending Application No. 10/580422. Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of the instant claims lies within the scope of the copending claims and so the instant claims anticipate the copending claims. It is

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clear that all the elements of the copending claims are to be found in the instant claims as the copending claims fully encompass the instant claims. The difference between the copending claims and the instant claims is that the instant claims contain more elements and thus outline a more specific invention. Thus the invention of the instant claims is in effect a "species" of the "generic" invention of the copending claims. It has been held that the generic invention is "anticipated" by the "species". See *In re Goodman*, 29 USPQ2d 2010 (Fed. Cir. 1993). Since the copending claims are anticipated by the instant claims, they are not patentably distinct from the copending claims.

| Instant claim | Corresponding Copending Claim |
|---------------|----------------------------------|
| 54 | 60 |
| 55 | 64 |
| 56 | - |
| 57 | - |
| 58 | 62 |
| 59 | 63 |
| 60 | - |
| 61 | 68 |
| 62 | 67 |
| 63 | 69 |
| 64 | 70 |
| 65 | 71 |
| 66 | 72 |
| 67 | - |
| 68 | 75 |
| 69 | 76 |
| 70 | 77 |
| 71 | - |
| 72 | 78 |
| 73 | - |
| 74 | - |
| 75 | 80 |
| 76 | 82 |
| 77 | 83 |
| 78 | - |
| 79 | - |

| | |
|----|----|
| 80 | 88 |
| 81 | 65 |
| 82 | 66 |
| 83 | 73 |
| 84 | 81 |
| 85 | - |
| 86 | - |
| 87 | - |
| 88 | - |

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

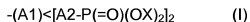
8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 54-57, 60-62, 70-73, 79, 80, 83, 87 and 88 are rejected under 35 U.S.C. 102(b) as being anticipated by Killat et al. (US 4,871,779).

10. Regarding claim 54, applicants claim a dendritic polymer of generation 0 to 12, a central core of valence of 1 or more, generation and optionally intermediate chains, a terminal group at the end of each intermediate chain represented by the formula (I):



wherein A1 represents the radical –CR< or –Heteroatom<; the radicals A2, which are identical or different, each independently of the other represents a single bond or a linear or branched hydrocarbon chain having from 1 to 6 chain members; X represents a radical -alkyl, -Aryl, -H or /M where M is a cation. Killat et al. disclose dense star

polymers (column 2 lines 26-27) with at least one dendritic branch (column 2 line 27), at least two terminal ion exchange moieties on each dendritic branch (column 2 lines 28-29) that is preferably phosphonate or phosphonium (column 6 lines 58-61). The dendritic polymer may have a PAMAM (polyamidoamine) structure, a ternary or trivalent core molecule, and second generation dendritic branches (column 10 lines 15-18). The biposponic terminals can be added through the direct reaction of the -NH_2 ends of the dendrons with chloromethylphosphonate (column 7 lines 19-24). This dendritic polymer would have a core valence of 3 or 4; generation of 2; A1< is the radical N< ; X is H; and A2 is methyl.

11. Regarding claim 55, applicants claim a dendritic polymer having a structure of the DAB, PAMAM, or PMMH type. Killat et al. disclose a dendritic polymer of the PAMAM type (column 10 lines 15-16).

12. Regarding claim 56, applicants claim the dendritic polymer wherein A1 represents the radical -CH< or -N< . Killat et al. disclose a dendritic polymer that is biposponated by directly reacting the -NH_2 end of the dendrons with chloromethylphosphonate (column 7 lines 19-24); this dendritic polymer will have terminals wherein A1 is the radical -N< .

13. Regarding claim 57, applicants claim a dendritic polymer wherein A2 represents -Me- . Killat et al. disclose a dendritic polymer that is biposponated by directly reacting the -NH_2 end of the dendrons with chloromethylphosphonate (column 7 lines 19-24); this dendritic polymer will have terminals wherein A2 is an -Me- .

14. Regarding claim 60, applicants claim a dendritic polymer with a core with valence 1 to 8. Killat et al. disclose a core molecule with a valence from 2 to about 2,300 (column 10 lines 47-48).
15. Regarding claim 61, applicants claim a dendritic polymer with a core with valence 3, 4 or 6. Killat et al. disclose a core molecule that is ternary or trivalent (column 10 line 15).
16. Regarding claim 62, applicants claim a dendritic polymer with 0 to 2 generations. Killat et al. disclose a dendritic polymer with 2 to 6 generations (column 10 line 64).
17. Regarding claims 70-73, 79, 80, 87 and 88, applicants claim formulae of the dendritic polymer generation and intermediate branches that applicants have admitted are commercially available and anticipated by PAMAM dendritic polymers (page 17 2nd paragraph of specification). Henceforth the dendritic polymers of Killat et al., being of PAMAM structure and having biphosphonic terminals, anticipate these claims.

Allowable Subject Matter

18. Claims 67, 74, 78, 81, 82, 85 and 86 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
19. Claims 58, 59, 63-66, 68, 69, 75-77 and 84 remain provisionally rejected over the obvious type double patenting rejection over Application No. 10/580422 but the allowability of these claims upon the filing of a terminal disclaimer is discussed below.

20. The following is a statement of reasons for the indication of allowable subject matter: Killat et al (US 4,871,779) in view of Caminade et al (WO 0053009).

21. Killat et al, discussed above, disclose dendritic polymers with bisphosphonic terminals, core and intermediate chains corresponding to those elements of independent claim 54. Killat et al does not disclose the specific core molecules of claims 58 and 59, the specific terminal groups of claims 81 and 82 or the specific generation chains of claims 63-69, 74-78 and 84-86.

22. Caminade et al disclose dendritic polymers with phosphonic terminals (column 13 lines 1-3) and the specific core molecules (column 15 lines 1-4) and generation chains (column 27 and 28 lines 30-40). Caminade et al, however, do not disclose bisphosphonic terminals or intermediate chains corresponding to those elements of independent claim 54.

23. There is no motivation or suggestion in the references or in the knowledge generally available to one having ordinary skill in the art to combine the terminal groups and intermediate chains of Killat et al with the core and generational chains of Caminade et al.

Response to Arguments

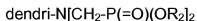
24. Applicant's arguments, see pages 32-33 paragraph 1, filed 06 November 2008, with respect to claims 54, 58-66 and 68-88 have been fully considered and are persuasive. The rejection of 09 July 2008 has been withdrawn.

25. Applicant's arguments, see pages 35-36 paragraph 3, filed 06 November 2008, with respect to claims 54-56, 58, 60-63 70-73, 79-83, 87 and 88 have been fully considered and are persuasive. The rejection of 09 July 2008 has been withdrawn.

26. Applicant's arguments, see pages 36-38 paragraph 3, filed 06 November 2008, with respect to claims 54, 58, 60-66, 68, 69 and 83 have been fully considered and are persuasive. The rejection of 09 July 2008 has been withdrawn.

27. Applicant's arguments filed 06 November 2008 with respect to the 35 USC 112 rejection of claim 78 have been fully considered but they are not persuasive. Applicant argues that the limitation "-C(D)=N-N(E)-(Alk)_a-" has sufficient antecedent basis because claims 54 and 75 recite an intermediate chain comprising a linear or branched hydrocarbon chain having from 1 to 6 chain members having one or more triple bonds and each chain member being optionally a heteroatom. These arguments are not persuasive because they are irrelevant to the problem of antecedent basis. The limitation "-C(D)=N-N(E)-(Alk)_a-" was rejected because the variables "D" and "E" are undefined, as was made clear in the Office Action filed 09 July 2008 and in paragraph 4 of this office action.

28. Applicant's arguments filed 06 November 2008 with respect to the 35 USC 102(b) rejection over Killat et al have been fully considered but they are not persuasive. Applicant argues that 1) Killat et al do not recite or suggest bisphosphonic groups and 2) the dendrimers of Killat et al are made by a different process than the dendrimers of the instant claims. These arguments are not persuasive because 1) Applicant admits that the process disclosed by Killat et al results in dendrimers of the formula:



which are bisphosphonic terminated dendrimers with -N< as -A1< and CH₂ as A2 [see Applicant's arguments page 34 3rd paragraph]. With respect to argument 2), the process of making the dendrimers is not claimed. As long as the prior art discloses the structure of the dendrimer then the claimed dendrimer is anticipated. The process of which it is made is not relevant to the claimed polymer/composition.

Conclusion

29. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **MICHAEL DOLLINGER** whose telephone number is

(571)270-5464. The examiner can normally be reached on Monday - Thursday
7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on ***. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/mmd/

/Randy Gulakowski/
Supervisory Patent Examiner, Art Unit 1796